The theory of money supply: a case study

Leon Taylor

KIMEP University

6. March 2014

THE THEORY OF MONEY SUPPLY: A CASE STUDY

Leon Taylor

The theory of money supply is less developed than that of money demand, largely because 19th-century economists believed that money was unimportant and because they viewed the central bank as either an appendage to the economy or as a welfare-maximizing black box. The paper reviews each of these beliefs in turn.

Did Money Matter to Early Theorists?

Money-supply theory roots in the controversy over whether analysis should concentrate on quantities of products and inputs (the "real") or on values measured in units of the national money (the "monetary"). Is the value of a new car its opportunity cost measured in other goods, since the same resources that produced the automobile could instead have produced 20 computers? Or is it $20,000? John Maynard Keynes (1991: 32) attributed the historical dominance of Real Analysis to the victory, in the early 19th century, of David Ricardo over Thomas Malthus concerning whether declines in aggregate demand precipitated economic slowdowns. Like David Hume, Malthus had argued that output responds to demand and subsequently to money supply (O'Brien 2007: 120). "…Ricardo conquered England as completely as the Holy Inquisition conquered Spain," Joseph Schumpeter (1994: 282) glumly observed, "…and the rest of the world." Keynes (1963b: 117-8), in 1933:

> Malthus is dealing with the monetary economy in which we happen to live; Ricardo with the abstraction of a neutral money economy…One

> cannot rise from a perusal of [their] correspondence without a feeling that the almost total obliteration of Malthus's line of approach and the complete domination of Ricardo's for a period of a hundred years has been a disaster to the progress of economics. Time after time in these letters Malthus is talking plain sense, the force of which Ricardo with his head in the clouds wholly fails to comprehend.

The debate over real and monetary analysis was manifest in the conflict of early 19th-century England between the Currency School, which feared that excess money inflated prices and thus amplified the business cycle, and the Banking School, which maintained that banks merely satisfied the demand for money and were not necessarily responsible for the business cycle (Schwartz 1989: 47). This controversy was precipitated by the British inflations of the Napoleonic era and by subsequent deflation (dated by Schumpeter (1994: 711) at 1815-1830 and beyond 1836). It recurred in the United States (Miller 1924: 304-8), and in the following century, again in response to national inflations.

The suspicion that money had real effects stimulated theory. Early in the 19th century, "the study of the causes which govern the value of money was taken quite seriously," wrote Alfred Marshall (2003: 79 and 90) in 1923, with Ricardo in mind.

> Men's thoughts were then much occupied with the economic basis of political security as well as of general well-being….The violent disturbances of public credit and prices, which were caused by the devastations and the alarms of the Napoleonic wars, set a singularly able and well-informed group of students and men of affairs at work on the problem; and they left very little to be added as regards fundamentals by their successors.

In the wake of the Industrial Revolution, economists were intrigued primarily by determinants of relative prices; determinants of the price level came second. A side effect of this work may have been the dominance, in 19th-century monetary theory, of work determining the value of money (Schumpeter 1994: 701). The purpose of money

was to provide a common measure for real values. John Stuart Mill (2006: 506) elaborated. "…The mere introduction of a particular mode of exchanging things for one another, by first exchanging a thing for money, and then exchanging the money for something else, makes no difference in the essential character of these transactions," stated *Principles of political economy*, the economics textbook of choice in the mid-19th century.

> It is not with money that things are really purchased….There cannot…be intrinsically a more insignificant thing, in the economy of society, than money; except in the character of a contrivance for sparing time and labor….Like many other kinds of machinery, it only exerts a distinct and independent influence of its own when it gets out of order.

Money affected the national economy only in the rare episode of disequilibrium.

In the eyes of late-19th-century theorists, money was vital to no market except its own. Since the macroeconomy merely summed all markets, money did not play a substantial role in it. In fact, money demand derived from consumption. To buy a chair, the consumer must cash in some asset (Handa 2000: 33). Total spending equals effective money demand (if people hold money only to spend it) and thus determines money supply. "…In our days," Knut Wicksell (1907: 215) wrote, "demand and supply of money have become about the same thing, the demand to a large extent creating its own supply." This was consistent with the microeconomic view that changes in demand would guide supply at first, since some inputs were fixed in the short run.

In one analysis, consumers covered the rising prices of output by cashing their bank accounts. Banks replenished their lost funds by purchasing money, albeit at higher prices for it than before. Output prices therefore determined interest rates. The latter could not serve as policy tools. Neither, being another resultant, could money supply.

Keynes's break with classical economists originated in his growing skepticism of the mainstream analysis which trivialized money. When he began work on *A treatise on money*, published in 1930, he "was still moving along the traditional lines of regarding the influence of money as something so to speak separate from the general theory of supply and demand. When I finished it, I had made some progress towards pushing monetary theory back to becoming a theory of output as a whole" (Keynes 1991: vi).

Before then, Keynes too had belittled money. More than a decade before *The general theory*, Keynes (2000: 152), then a monetarist, worried that the public would confuse nominal value for purchasing power. "It is not easy, it seems, for men to apprehend that their money is a mere intermediary, without significance in itself, which flows from one hand to another, is received and is dispensed, and disappears when its work is done from the sum of a nation's wealth."

In 1923, Keynes (2000) had outlined a case for manipulating the money supply, through the central bank's purchases and sales of securities, in order to stabilize domestic prices, as Irving Fisher (1912) had long proposed. But in 1936, Keynes's *General theory* adopted the then-conventional notion that monetary authorities would simply supply the amount demanded by people and government. "This book…has evolved into what is primarily a study of the forces which determine changes in the scale of output and employment as a whole," Keynes (1991: vii) wrote, "and, whilst it is found that money enters into the economic scheme in an essential and peculiar manner, technical monetary detail falls into the background."

The principle underpinning theoretical indifference to money was aggregation of decisions and markets. Since money mattered little to individual decisions, it mattered

little to their sum. Schumpeter (1989: 14) thought aggregation an error and illustrated with a metaphor.

> We may be interested in the processes of life going on in [a] dog, such as the circulation of the blood, its relation to the digestive mechanism, and so on. But no matter how completely we master all their details, and however satisfactorily we succeed in linking them up with each other, this will not help us to describe or understand how such things as dogs have come to exist at all.

By the mid-1930s, the rival view — that the macroeconomy exceeded the sum of its parts -- was becoming influential.

> I mean by [a general theory] that I am chiefly concerned with the behavior of the economic system as a whole,— with aggregate incomes, aggregate profits, aggregate output, aggregate employment, aggregate investment, aggregate saving rather than with the incomes, profits, output, employment, investment and saving of particular industries, firms or individuals,

Keynes wrote in a 1939 preface to the French edition of *The general theory of employment, interest and money*. "And I argue that important mistakes have been made through extending to the system as a whole conclusions which have been correctly arrived at in respect of a part of it taken in isolation." For example, "*the importance of money essentially flows from its being a link between the present and the future*" — a point overlooked in static aggregate theory (Keynes 1991: 293; italics in the original).

To neoclassical economists, this denial of simple aggregation arose from misapprehension of microeconomics. "Keynes himself was not interested in the theory of relative prices," remarked Joan Robinson (2006: 79). "Gerald Shove used to say that Maynard had never spent the twenty minutes necessary to understand the theory of value."

The assertion of money neutrality may seem to have, if nothing else, the virtue of clarity. In reality, macroeconomists long remained ambivalent about money. Adam Smith (1976: 309 and 313) regarded it as "the great instrument of commerce" but of peripheral interest because its value was nominal. As late as 1911, Joseph Schumpeter echoed this disdain; money was a mere "cloak of economic things" (Schumpeter 1996: 51). But his *Theory of economic development* also said the money market "is always, as it were, the headquarters of the capitalist system, from which orders go out to its individual divisions, and that which is debated and decided there is always in essence the settlement of plans for further development" (Schumpeter 1996: 126). Such ambivalence may have retarded development of the theory of money supply.

In sum, even economists who thought that money was important labored more on the theory of money demand rather than on that of supply, perhaps partly because there was no developed theory of the latter for them to build upon.

What Role Did the Central Bank Play?

Assumption I: The bank was inessential

The Banking and Currency Schools of the early 19th century had regarded the central bank as vital to the economy (Schwartz 1989: 47). By the 1870s, however, economists were balking at the first step toward a theory of the central bank — explaining how it differed from a commercial bank. "…The distinct teaching of our highest authorities has often been that no public duty of any kind is imposed on the Banking Department of the Bank [of England]," wrote Bagehot (undated: 81), "that, for

banking purposes, it is only a joint stock bank like any other bank; that its managers should look only to the interest of the proprietors and their dividend; that they are to manage as the London and Westminster Bank or the Union Bank manages." An economic historian affirms this perception. "The Bank of England was to its directors just a large bank," wrote John Wood (2009: 14) "with a special responsibility for financial stability because of its size (and they were not always conscientious in this regard, another reflection of bankers' behavior) but none for such macroeconomic variables as the price level."

Without theory to guide them, central banks such as the Federal Reserve in the late 1910s issued money only if it seemed needed (Miller 1921). This enabled the Fed to deny that it was responsible for inflation. Rising wages and prices led to an increase in money, not the other way around (Reed 1921: 64-5). In 1915, the president of England's Board of Trade vouchsafed that "the line of escape from rising prices must be found in raising wages..." (Keynes 1950b: 171). Even the president of the Reichsbank, despite the hyperinflation of 1923, seemed to deny that creating money would lessen the value of a monetary unit (Cannan 1924: 54).

In 1924, Sir Harry Goschen, chairman of a major British bank, National Provincial Banks, told the public that "I cannot help thinking that there has been lately far too much irresponsible discussion as to the comparative advantages of Inflation and Deflation. Discussions of this kind can only breed suspicion in the minds of our neighbors as to whether we shall adopt either of these courses, and if so, which. I think we had better let things take their natural course." Keynes (1963a: 222) commented: "Best of all, perhaps, just to leave Sir Harry to take his natural course."

As late as the early 1920s, the notion that the central bank could stabilize the economy through monetary policy was still almost novel. The aim of the central bank was just to obtain enough gold to enable trade (Schumpeter 1994: 729-31) and to buy government debt. The Federal Reserve Act of 1913 called upon the central bank to set policy "with a view of accommodating commerce and business" (Federal Reserve Act, Section 14, Paragraph D; quoted in Miller 1921: 186). The emergence in the U.S. of inflation that had been suppressed during World War I "required" new dollars – a view that the Federal Reserve would reject only eventually. "It is only over the last 60 years," Hayek (1999a: 252) wrote in 1981, "that money has come to be regarded as one of the prime instruments of economic policy in general and a useful way by which political authority could contribute to prosperity."

A central bank may have been a passive policymaker partly because it observed a device by which commercial banks regulated their own creation of money — the share of deposits that they locked up in vaults. Money supply depended partly and inversely on this reserves ratio, said Keynes. Remarkably, banks in various settings tended toward the same ratio, he noted. His colleague at Cambridge, Arthur Cecil Pigou, had thought that the ratio would depend on activity of the national economy, but Keynes (1950b: 53-78) calculated in 1930 that banks throughout the West, in large economies as well as small, had stabilized this share at roughly a tenth. (Sixty years earlier, the ratio of cash to liabilities in Western national banks of the early 1870s varied from 11% to 12% in England and the United States to 47% in France (Bagehot undated: 168-70).) Adopting the reserves ratio of leading private banks could serve as a bank's public signal of stability. This point could be subsumed under the argument of the Free Banking School

for competition among private banks in issuing currency convertible into specie. Since the depositor would accept the notes only of credible banks, these had an incentive not to over-issue (Schwartz 1989).

Passive adoption of the standard reserve ratio was common even in countries such as Britain where the central bank could have required commercial banks to set aside minimum reserves but did not. Keynes (1950b: 70-4) criticized this failure. So did Bagehot (undated: 159). The ratio should depend on the need to demonstrate to the public that the Bank had sufficient reserves to ward off a panic. "The forces of the enemy being variable, those of the defense cannot always be the same," wrote Bagehot in 1873. In fact, the forces of the defense varied naturally. "Liabilities may be imminent or distant, and a fixed rule which imposes the same reserve on both will sometimes err by excess and sometimes by defect" (page 167). Moreover, when the public knew that the reserve ratio had been fixed at, say, one-third, "the moment the banks were close to one-third, alarm would begin and would run like magic" (page 167). Despite these flaws of a fixed reserve ratio, Bagehot conceded that abandoning the rule would amount to "almost a revolution in the policy of the Bank of England" (page 159).

Part of the problem was a lack of Bank theory. "…If it were acknowledged that the Bank is charged with the sole custody of our banking reserve, and is bound to deal with it according to admitted principles, then a governor of the Bank could look to those principles" (Bagehot undated: 36). First and foremost, the Bank should maintain a reserve that was large enough to persuade the public that it could meet any sudden demand for liquidity. If anything, it should err on the side of caution by maintaining excessive reserves, since the only ensuing loss would be foregone interest (Bagehot

undated: 161). But this is exactly the loss that most concerned Bank directors, being merchants facing no evident penalty for inducing a panic. "The Bank of England…has to keep [the reserve] through all changes of the money market, and all turns of the Exchanges; has to decide on the instant in a panic what sort of advances should be made, to what amounts, and for what dates; and yet it has a constitution plainly defective" (Bagehot undated: 109).

Not all economists were persuaded. Schumpeter (1994: 697) wrote cryptically in the mid-20th century that "there is more to the old theory that a central bank serves the economy best if it attends to its own profit interest than we are at present willing to admit."

Perhaps the central bank sold money cheaply to powerful clients. "The Federal Reserve Board adopted a policy in order to assist in the war financing which was economically unsound," the Board's governor admitted to Congressional committees in 1920 (Miller 1921: 185-6). To reduce the cost of financing World War I, the Fed lent cheaply to commercial banks, which then lent to the Treasury. "The low rate of interest borne by these [Treasury] bonds was fixed with a view of holding down the expenses of the government as far as possible. Anyway, that is something the Federal Reserve Board has no responsibility for."

The importance of policy to theory sometimes threatened to convert the latter into a popularity contest, asserted economists who were likely losers. People "persistently disregarded" Austrian proposals because they "hurt in the application," commented Hayek (1995: 233) in 1945. "Then Lord Keynes assured us that we had all been mistaken and that the cure could be painless and even pleasant" — just keep spending

until reaching full employment. "The argument was not less effective because it was couched in highly technical language. It gave the support of the highest scientific authority to what had always been the popular belief, and the new view gained ground rapidly."

Just as he had criticized Smith, Schumpeter (1936: 791-2) complained that *The general theory* was policy advocacy in search of a theory. Keynes

> pleads for a definite policy [government spending in downturns], and on every page the ghost of that policy looks over the shoulder of the analyst, frames his assumptions, guides his pen. In this sense, as in another, it is Ricardo all over again….It is…vital to renounce communion with any attempt to revive the Ricardian practice of offering, in the garb of general scientific truth, advice which — whether good or bad — carries meaning only with references to the practical exigencies of the unique historical situation of a given time and country. This sublimates practical issues into scientific ones, divides economists — as in fact we can see already from any discussion about this book — according to lines of political preference, produces popular successes at the moment, and reactions after — witness the fate of Ricardian economics — neither of which have anything to do with science. Economics will never have nor merit any authority until that unholy alliance is dissolved.

Danger inhered in the charter of a conventional central bank. It has "the recognized duty…to supply in an emergency — at a price — all that cash that may be needed to repay [commercial bank] deposits," wrote Hayek (1999c: 89) in 1937. (To put the point in another way, the central bank should maintain a discount rate that was no higher, and normally equal to, the market rate of interest.) "Yet while the ultimate responsibility to provide the cash when needed is thus placed on the central bank, until this demand actually arises, the latter has little power to prevent the expansion leading to an increased demand for cash." The theory of passive money supply held the gun-cotton of the economy's destruction.

Assumption II: The bank was a black box

The absence of a political theory of money supply may have stemmed from the confidence of economists that the central bank — and the state in general — was dedicated to the public weal. Events belied the argument in 1840 of an American economist, Thomas R. Dew, that banks should control money supply because they had superior knowledge of financial conditions (Miller 1924: 306-7). Nevertheless, almost a century later, Keynes returned to Dew's view. One creator of the Federal Reserve, Senator Carter Glass, described it as "an altruistic institution, a part of the Government itself, representing the American people, with powers such as no man would dare misuse" (Wood 2009: viii).

Some economists thought that central bank officials advanced the social welfare out of self-interest. Keynes's old teacher, Alfred Marshall (2003: 136-7), had written in 1923 that while the directors of the Bank of England included "many leading business men…it has been stated publicly that, as a general rule, their stakes in the Bank itself are so much less than their stakes in the general commercial prosperity of the country, that they cannot be tempted to sacrifice public interests to those of the shareholders of the Bank….They act with that full sense of responsibility which belongs to public ministers." Marshall was echoing Henry Thornton's view that "the numerous proprietors who choose the directors, and have the power of controlling them…are men whose general stake in the country far exceeds that particular one which they have in the stock of the company" (Wood 2009: 25). The appendix to this paper suggests that it is improbable that a Bank of England director would have benefited on net by increasing Bank reserves in order to stabilize the economy.

Keynes (1950b: 163) generalized the Hamiltonian view. "Perhaps the ultimate solution lies in the rate of capital development becoming more largely an affair of state, determined by collective wisdom and long views," he wrote in 1930, in *A treatise on money*.

> If the task of accumulation comes to depend somewhat less on individual caprice, so as to be no longer at the mercy of calculations partly based on the expectation of life of the particular mortal men who are alive today, the dilemma between Thrift and Profit as the means of securing the most desirable rate of growth for the community's aggregate wealth will cease to present itself.

Keynes may have been on shaky ground to assume that the price at which capital can be resold never reflects its expected present value beyond the life of its current owner. The prospective purchaser may anticipate reselling the asset decades later and so would consider now, as he estimates the highest price that he would pay for it, its value to the next generation. But what would infuriate future critics like Milton Friedman (1997: 22) was Keynes' cool presumption that state officials would come closer to investing in real capital at the optimal rate than could the invisible hand. As early as 1766, the public finance theorist Johann Heinrich Gottlob von Justi (1948: 385) had pointed out that monarchs were self-interested and so had to be compelled to raise money from their crown estates first rather than from the populace. In this respect, a monetary policymaker has the same temptations as a fiscal one: An expansionary policy transfers wealth from a future generation to the present one via the inflation tax, since people rarely recognize inflation immediately. More practically, a Hayekian could argue that no government (or individual) could determine the variable that was critical to investment — the Wicksellian natural rate of interest, which cleared the market for real loanable goods (Hayek 1999d: 81; Hayek 1999b: 225) — because it was unobservable.

The younger Keynes (1914a: 622) had regarded most central banks — the Bank of England was a decided exception — as hilariously irrational, thus mirroring the populace:

> …In most other parts of the world…a gold reserve is thought of as being some sort of charm, the presence of which is valuable quite apart from there being any idea of dissipating it, — as the emblem, rather than the prop, of respectability. It would be consistent with these ideas to melt the reserve into a great golden image of the Chief Cashier and place it on a monument so high that it could never be got down again. If any doubt comes to be felt about the financial stability of the country, a glance upwards at the image will, it is thought, restore confidence. If confidence is not restored, this only shows that the image is not big enough.

Even a war fund such as Germany's in World War I often went by the board. "Although many countries now hold large quantities of gold, there are but few which pursue a rational policy in regard to it. At considerable cost they build up large reserves in quiet times presumably with a view to the next crisis; but when the crisis comes mistaken policy renders them as little able to use the gold as if it were not there at all" (Keynes 1914b: 467).

It is not clear why Keynes abandoned these strong views. Schumpeter (1946: 506) complained that *The general theory* failed to take banks seriously. "…From first to last, Keynes displayed a curious reluctance to recognize a very simple and obvious fact and to express it by the no less simple and obvious phrase, that typically industry is financed by banks."

Keynes' sunny new view of central bankers ignored David Hume's cynicism. "A great state," Hume (1948: 334) wrote in 1752, "would dissipate its wealth in dangerous and ill-concerted projects; and probably destroy, with it, what is much more valuable, the

industry, morals and numbers of the people." Keynes also ignored Adam Smith's argument in 1776 that altruism may mislead the leader into disaster.

> The statesman, who should attempt to direct people in whatever manner they ought to employ their capitals, would not only load himself with a most unnecessary attention, but assume an authority which could safely be trusted, not only to no single person, but to no council or senate whatever, and which would nowhere be so dangerous as in the hands of a man who had folly and presumption enough to fancy himself fit to exercise it (Smith 1976: 478).

Skeptical theorists of the money supply had long recognized its political flavor. "Some [writers], regarding banks as the principal cause of commercial crises, conceived of them as arbitrarily alternating the volume of media of payment (and therefore the general level of prices) according to their own caprice," wrote an historian of American economic thought, Harry Miller (1924: 308). "Such a notion was especially prominent in the earliest days of our banking experience, and again in the 1830s, when to damn banks or defend them became largely a matter of political faith." But such skeptics were few.

Conclusions

The theory of money supply might have progressed had economists picked up on early glimmerings such as Bagehot's reflections on the political economy of central-bank directors. This is not the first time that economists have failed to build upon keystones of the past. "The Englishmen who started writing on monetary policy around 1800 knew very little about the English work of the seventeenth and even the eighteenth centuries," wrote Schumpeter (1994: 706), "and still less, almost nothing in fact, of the non-English work of those centuries — an interesting example of how the advance of economics has

been and is being impaired by these recurrent losses of previous accumulations of knowledge."

Appendix: The Impact of Bank Reserves on the Director's Portfolio

Denote Y as national income, R as central bank reserves, A as central bank assets, r_1 as the nationwide rate of interest, r_2 as the rate of interest on central bank assets, s_1 as the director's share of national income, and s_2 as his share of returns earned by the central bank. Then the value of his portfolio, which is based on national and bank income, is

$$V = s_1 r_1 Y(R) + s_2 r_2 (A - R).$$

The formula assumes that national income depends positively on bank reserves because higher reserves help stabilize the economy.

In effect, Marshall assumes that $dV/dR > 0$. This implies that

Equation 1

$$s_1 r_1 \frac{\partial Y}{\partial R} > s_2 r_2$$

If $r_1 = r_2$, then Equation 1 simplifies to

Equation 2

$$\frac{\partial Y}{\partial R} > \frac{s_2}{s_1}.$$

Out of self-interest, the bank director will support increasing bank reserves by one pound if the resulting increase in national income exceeds the ratio of his share of bank returns to his share of national returns.

Here's a back-of-the-envelope estimate. In 1921, the population of the United Kingdom was 44.1 million; of England and Wales, 37.9 million (House of Commons 1999: 6). Today, the Bank has nine non-executive directors as well as three governors (Bank of England 2012). Suppose that a director's general income is as much as 10 times the average income and that he receives as little as one-thousandth of the returns earned by the Bank. Then, from Equation 2, Bank policy to stabilize the national economy would serve the director's self-interest if another pound in Bank reserves would increase national income by about 3,800 pounds. This multiplier seems improbably large.

References

Bagehot, W. (Undated [1873]) *Lombard Street.* No place of publication stated: Dodo Press.

Bank of England (2012) "Bank of England: Governance." www.bankofengland.coc.uk.

Cannan, E. (1924) "Limitation of Currency or Limitation of Credit?" *Economic*

Journal 34 (133): 52-64.

Fisher, I. (1912) "A More Stable Gold Standard." *Economic Journal* 22 (88): 570-6.

Friedman, M. (1997) "John Maynard Keynes." *Economic Quarterly* 83 (2): 1-23

Handa, J. (2000) *Monetary Economics.* London: Routledge.

Hayek, F. A. (1999a [1981]) "The Future Unit of Value." In S. Kresge (ed.) *The Collected Works of F. A. Hayek, Volume 6: Good Money, Part II: The Standard*, 238-52. Chicago: University of Chicago Press.

_____(1999b [1928]) "Intertemporal Price Equilibrium and Movements." In S. Kresge (ed.) *The Collected Works of F. A. Hayek, Volume 5: Good Money, Part I: The New World*, 186-227. Chicago: University of Chicago Press.

_____(1999c [1937]) "Monetary Nationalism and International Stability." In S. Kresge (ed.) *The Collected Works of F. A. Hayek, Volume 6: Good Money, Part II: The Standard*, 37-99. Chicago: University of Chicago Press.

_____(1999d [1925]) "Monetary Policy in the United States After the Recovery from the Crisis of 1920." In S. Kresge (ed.) *The Collected Works of F. A. Hayek, Volume 5: Good Money, Part I: The New World*, 71-152. Chicago: University of

Chicago Press.

_____(1995 [1945]) “Review of Sir William Beveridge’s *Full Employment in a Free Society.”* In B. Caldwell (ed.) *The Collected Works of F. A. Hayek, Volume 9: Contra Keynes and Cambridge: Essays, Correspondence*, 233-6. Chicago: University of Chicago Press.

House of Commons (1999) “A Century of Change: Trends in UK Statistics since 1900.” House of Commons Research Paper 99/111. London: House of Commons.

Hume, D. (1948 [1752]) “Political Discourses.” In A. E. Monroe (ed.) *Early Economic Thought: Selections from Economic Literature Prior to Adam Smith*, 309-38. Cambridge, Mass.: Harvard University Press.

von Justi, J. H. G. (1948 [1766]) “Public Finance.” In A. E. Monroe (ed.) *Early Economic Thought: Selections from Economic Literature Prior to Adam Smith*, 377-99. Cambridge, Mass.: Harvard University Press.

Keynes, J. M. (1991 [1936]) *The General Theory of Employment, Interest and Money.* San Diego: Harcourt.

_____ (2003 [1939]) *The General Theory of Employment, Interest and Money*, preface to the French edition. Gutenberg.net.au.

_____(1914a) “Review of Friedrich Bendixen, *Geld und Kapital.”* *Economic Journal* 24 (95): 417-9.

_____(1963b [1933]) “Robert Malthus: The First of the Cambridge Economists.” In J. M. Keynes, *Essays in Biography*. New York: W.W. Norton & Co.

_____(1963a [1924]) “The Speeches of the Bank Chairmen [1924-27].” In J. M. Keynes, *Essays in Persuasion*, 220-43. New York: W.W. Norton & Co.

_____(2000 [1923]) *A Tract on Monetary Reform.* Amherst, N.Y.: Prometheus Books.

_____(1950a [1930]) *A Treatise on Money,* Volume I. London: Macmillan and Co.

_____(1950b [1930]) *A Treatise on Money,* Volume II. London: Macmillan and Co.

_____(1914b) “War and the Financial System.” *Economic Journal* 24 (95): 460-86.

Marshall, A. (2003 [1923]) *Money, Credit and Commerce.* Amherst, N.Y.: Prometheus Books.

Mill, J. S. (2006 [1848]) *Principles of Political Economy.* Indianapolis: Liberty Fund.

Miller, A. C. (1921) “Federal Reserve Policy.” *American Economic Review* 11: 177-206.

Miller, H. E. (1924) “Earlier Theories of Crises and Cycles in the United States.” *Quarterly Journal of Economics* 38: 294-329.

O’Brien, D. P. (2007) “Classical Economics.” In W. J. Samuels, J. E. Biddle, and J. B. Davis (eds.) *A Companion to the History of Economic Thought*, 112-29. Malden, Mass.: Blackwell Publishing.

Reed, H. L. (1921) “The Work of the Federal Reserve Board.” *Journal of Political Economy* 29: 57-77.

Robinson, J., (2006 [1962]) *Economic Philosophy*. New Brunswick, N. J.: AldineTransaction.

Schumpeter, J. A. (1989 [1939]) *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*. Abridged. Philadelphia: Porcupine Press.

_____(1994 [1954]) *A History of Economic Analysis*. Oxford: Oxford University Press.

_____(1946) “John Maynard Keynes: 1883-1946.” *American Economic Review*

36 (4): 495-518.

_____(1936) “Review of John Maynard Keynes, *The General Theory of Employment, Interest and Money.” Journal of the American Statistical Association* 31: 791-2.

_____(1996 [1911]) *The Theory of Economic Development*. New Brunswick, N.J.: Transaction Publishers.

Schwartz, A. J. (1989 [1987]) “Banking School, Currency School, Free Banking School.” In J. Eatwell, M. Milgate, and P. Newman (eds.) *The New Palgrave: Money*, 41-9. New York: W.W. Norton & Co.

Smith, A. (1976 [1776]) *An Inquiry into the Nature and Causes of the Wealth of Nations*. Chicago: University of Chicago Press.

Wicksell, K. (1907) “The Influence of the Rate of Interest on Prices.” *The Economic Journal* 17: 213-20.

Wood, John H. (2009 [2005]) *A History of Central Banking in Great Britain and the United States*. Cambridge: Cambridge University Press.

World Bank (2012) “World Development Indicators.” www.worldbank.org.